Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

(1-62) (Canceled)

63. (New) A method of forming a thermally insulating layer system on a metallic substrate surface, comprising:

forming a plasma beam;

introducing a coating material in the form of a powder having particles in the range between 1 and 50 μm, carried by a delivery gas into the plasma beam, so as to form a powder beam;

defocusing the powder beam by using the plasma beam with a sufficiently high specific enthalpy and by maintaining a process pressure between 50 and 2000 Pa for at least partially melting some of the powder and vaporizing at least 5% by weight of the powder, so as to form a vapor phase cloud; and

forming from the vapor phase cloud onto the metallic substrate surface an insulating layer, being a part of said insulating layer system, having an anisotropic columnar microstructure having elongate particles;

wherein said anisotropic columnar microstructure is aligned substantially perpendicular to the metallic substrate surface and low-density transition regions with little material delimit the elongate particles relative to one another.

64. (New) The method of claim 63, wherein said forming a thermally insulating layer system on a metallic substrate surface comprises using a low pressure plasma spray (LPPS) system.

65. (New) The method of claim 63, wherein said plasma beam with a sufficiently high specific enthalpy comprises a plasma beam having an effective power in the range between 40 and 80 kW.

66. (New) The method of claim 63, comprising maintaining a process pressure between 100 and 800 Pa.

67. (New) The method of claim 63, wherein the process gas for the generation of the plasma beam comprises a mixture of inert gases with a total flow in the range between 30 and 150 SPLM.

68. (New) The method of claim 67, wherein the mixture of inert gases comprises argon and helium, with the volume ratio of argon to helium preferably amounting to 2 : 1 to 1 : 4.

69. (New) The method of claim 63, wherein the powder supply rate of the coating material is between 5 and 60 g/min.

70. (New) The method of claim 63, wherein the powder supply rate of the coating material is between 10 and 40 g/min.

71. (New) The method of claim 63, wherein the thermally insulating layer is used in a gas turbine and its layer thickness is the range between 20 and 1000 μm.

72. (New) The method of claim 63, wherein the thermally insulating layer is used in a gas turbine and its layer thickness is at least 100 μm.

73. (New) The method of claim 63, comprising moving the substrate during said forming an insulating layer, with a rotary movement relative to the vapor phase cloud.

74. (New) The method of claim 63, comprising moving the substrate during said forming an insulating layer, with a pivoting movement relative to the vapor phase cloud.

75. (New) The method of claim 63, wherein said coating material comprises oxide ceramic components, wherein an oxide ceramic component of the coating material is a zirconium oxide completely or partly stabilized with yttrium, cerium or other rare earths and wherein the material used as a stabilizer is alloyed with the zirconium oxide in the form of an oxide of said rare earths.

76. (New) The method of claim 75, wherein the size distribution of the powder particles of the coating material is determined by means of a laser scattering method, with spray drying or a combination of melting and subsequent breaking and/or grinding being used as a method for the manufacture of the power particles.

77. (New) The method of claim 75, wherein the size distribution of the powder particles of the coating material is determined by means of a laser scattering method and wherein this size distribution lies substantially in the range between 3 and 25 μm, with spray drying or a combination of melting and subsequent breaking and/or grinding being used as a method for the manufacture of the power particles.

78. (New) The method of claim 63, further comprising using an additional heat source so as to carry out said forming from the vapor phase cloud onto the metallic substrate surface an insulating layer, within a predetermined temperature range, with a heat input of the heat source and the temperature in the substrate being controlled independently of said process pressure, and said plasma enthalpy.

79. (New) The method of claim 78, wherein the thermally insulating layer system comprises, apart from the thermally insulating layer, a base layer between a base body and the thermally insulating layer and a cover layer on the thermally insulating layer, wherein

a) the base layer includes a hot gas corrosion protection layer, the layer thickness of which has a value between 10 and 300 μm, and which comprises at least partly of either a metal aluminide, of a MeCrAlY alloy, with Me signifying one of the metals Fe, Co or

Ni, or of an oxide ceramic material and has an either dense columnar or uniformly directed structure,

b) the cover layer is a smoothing layer, the layer thickness of which has a value between 1 and 50 µm, and which comprises at least partly of the same or a similar material to the thermally insulating layer, and

c) the part layers of the layer system are all applied in a single working cycle.

80. (New) The method of claim 78, wherein the thermally insulating layer system includes, apart from the thermally insulating layer, a base layer between a base body and the thermally insulating layer and a cover layer on the thermally insulating layer, wherein

a) the base layer includes a hot gas corrosion protection layer, the layer thickness of which has a value between 25 and 150 µm, and which comprises at least partly of either a metal aluminide, of a MeCrAlY alloy, with Me signifying one of the metals Fe, Co or Ni, or of an oxide ceramic material and has an either dense columnar or uniformly directed structure,

b) the cover layer is a smoothing layer, the layer thickness of which has a value between 10 and 30 µm, and which comprises at least partly of the same or a similar material to the thermally insulating layer, and

c) the part layers of the layer system are all applied in a single working cycle.

81. (New) The method of claim 63, wherein the substrate comprises a nickel or cobalt based alloy.

82. (New) The method of claim 63, further comprising thermally treating the thermally insulating layer system.

83. (New) The method of claim 63, wherein the substrate is a turbine blade of a stationary gas turbine or of an aircraft engine.

84. (New) The method of claim 63, wherein the substrate is a guide vane or rotor blade or a component acted on by hot gas.

85. (New) The method of claim 63, wherein the substrate is a heat shield in an aircraft engine.